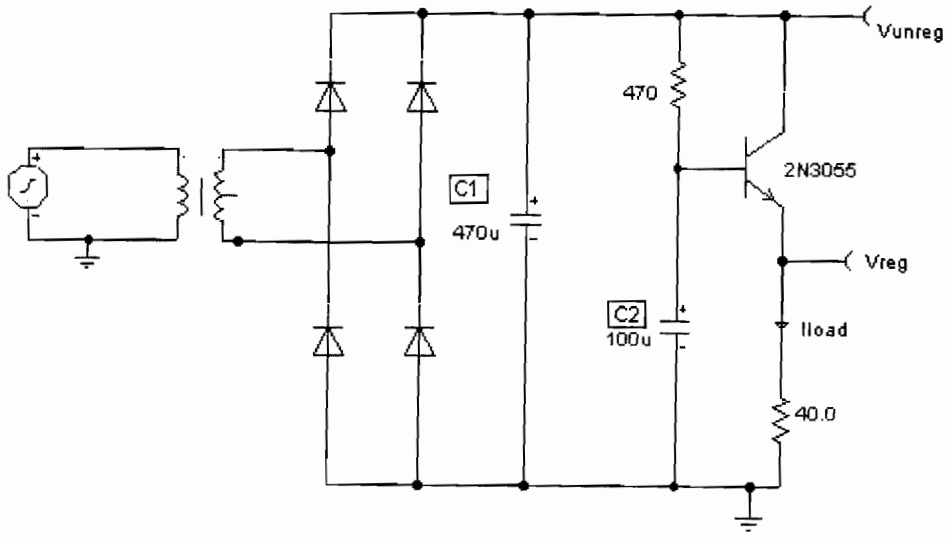
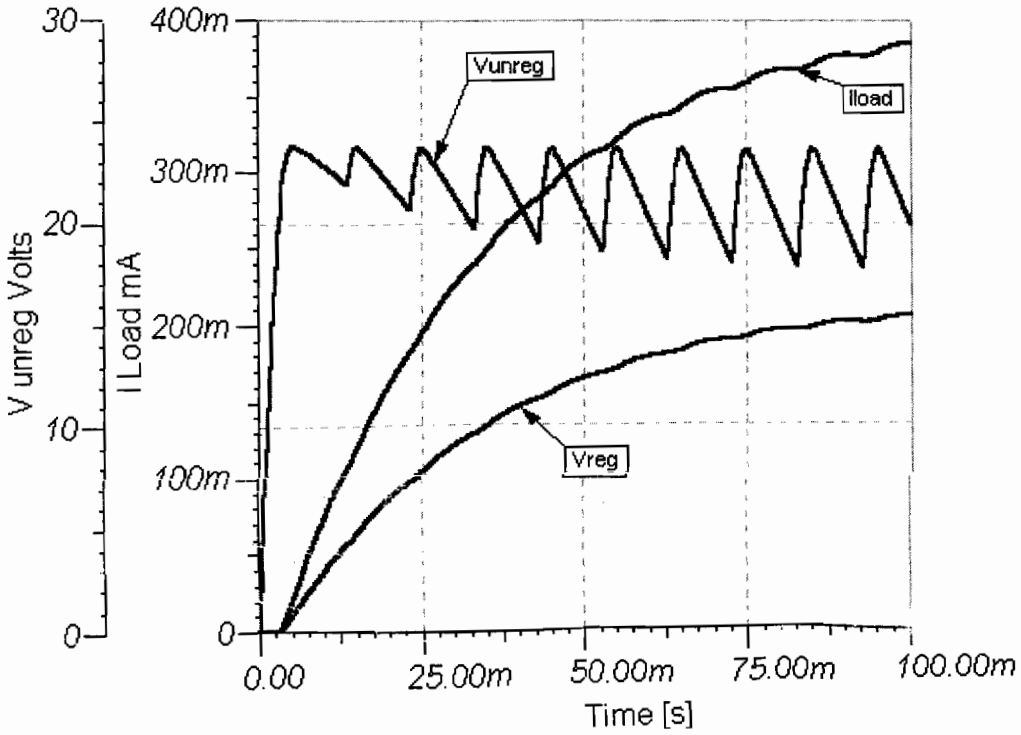
Rectification using a Gyrator Circuit



Notes:

To avoid excess ripple output on a power supply feeding a heavy load, usually a large value capacitor is chosen following the rectifier. In this circuit, C1 is only a 470uF capacitor. The gyrator principle uses the effect that the value of input capacitance at the base of a transitor is effectively multiplied by the current gain of the transistor. Here C2 which is 100u appears at the ouput (Vreg) to be 100 x current gain of the 2N3055 power transistor. If you assume a dc current gain of 50, then the smoothing across the supply, would be as though you had chosen a 5000uF capacitor. The graph below shows the output voltage and current through the load :-



The load draws nearly 400mA. With the output directly from the rectifier there is about 5v pk-pk ripple
in the output. Using the output at the emitter of the transistor things are much better. The circuit will
take a few hundred milliseconds for the output voltage to stabilize and reach maximum value. The
advantages are that a smaller, less costly reservoir capacitor can be used with this circuit to give a
high quality smoothed supply.

Back to Power Supply Circuits